

MEMORANDUM

DEPARTMENT OF TRANSPORTATION
Design/Construction
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DATE: September 20, 1999

TO: All CDOT & Consultant Design & Construction Personnel

FROM: P. K. Padhiar, Bridge Engineer

SUBJECT: Technical Memorandum #26 - Evaluating Existing Structures For Rail Replacements

FHWA approval of the CDOT submittal of our revised two tube steel rail (Type 10M) was predicated on several geometric requirements. One of those requirements was the curb section. Initial crash tests of the Oregon two tube section that we adopted for our Type 10 Rail included a 6 inch high curb.

Existing structures that are proposed to be retrofitted with new railing should be evaluated for not only the overall height of railing, but to ensure at least 6 inches of exposed curb face. If the necessary geometrics can not be met, the curb can be replaced with a higher curb or a Type 7 concrete bridge rail. For Bridge Rail Type 4 and Type 7 (safety barriers shapes), the requirement is at least 1 inch but not more than 3 inches of vertical face is exposed. The height of safety barrier shapes above the reference surface (top of asphalt overlay) shall be at least 2'-8". In marginal situations, the asphalt wearing surface can be milled to taper into the curb face thereby providing a 6 inch curb or vertical exposure and proper overall rail height.

Where tapered asphalt is used, the taper should not exceed 1 inch per foot and should not provide an adverse slope to the cross slope of the roadway if drainage can not be maintained. On narrow shoulders, the taper should extend to the lane line. On wide shoulders, the taper can begin within 2 or 3 feet of the curb face. The intent is to avoid a break in cross slope that would be difficult for drivers to negotiate. Asphalt in excess of 4 inches should be removed from any structure in accordance with CDOT policy.

The same considerations of geometrics shall be taken when evaluating existing railing to be left in place. The CDOT Bridge Engineer must approve use of a curb height less than 6 inches but greater than 4 inches to avoid rebuilding a curb. In no case shall a curb height of less than 4 inches be used. If the curb is rebuilt, it shall be rebuilt to conform to the crash tested configuration by providing 6 inches minimum curb exposure with a total asphalt wearing surface of 4 inches.

PKP/SLW/slw

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